

Allen Steam Station

Location:

- Gaston County, North Carolina

Historic CCR Storage Areas:

- Retired Ash Basin
- Active Ash Basin
- RAB Ash Landfill
- DORS Areas

Closure Option Selected:

- Cap-in-place
-

I. History of CCR Management

Duke Energy Carolinas, LLC's ("DE Carolinas" or the "Company") Allen Steam Station ("Allen Plant") is situated along Lake Wylie in Belmont, Gaston County, North Carolina. DE Carolinas began commercial operations at the Allen Plant in 1957. The Allen Plant has two onsite ash basins that were constructed to receive sluiced coal combustion residuals ("CCR") from the coal-fired electric generation units at the plant. The first ash basin, known now as the Retired Ash Basin, was constructed in 1957 and was in operation until 1973. The second ash basin, known now as the Active Ash Basin, was constructed in 1972 and is still in operation today.

There are four areas designated as Distribution of Residual Solids ("DORS"), which are unlined dry ash stack overfills located above the west portion of the Retired Ash Basin that began receiving ash in 1995 through 2006. The DORS ash was dredged from the Active Ash Basin in order to extend the useful life of the Active Ash Basin. The DORS have served as laydown areas and access roads, and have improved drainage in the areas nearby.

In 2009, the Allen Plant replaced its fly ash sluicing operation with a flue gas desulfurization ("FGD") facility. Also in 2009, DE Carolinas received a permit to operate an onsite, lined landfill, known as the RAB Ash Landfill, which was constructed within the footprint of the Retired Ash Basin. The RAB Ash Landfill receives dry fly ash generated by the Allen Plant's coal-fired units. The Active Ash Basin still receives sluiced bottom ash from the coal-fired units.

II. Closure Plan

DE Carolinas' closure plan for the Allen Plant entails closing the Retired Ash Basin and Active Ash Basin in place pursuant to state and federal regulatory requirements. *See* 80 Fed. Reg. 21301 (CCR Rule); North Carolina Coal Ash Management Act ("CAMA"), S.B. 729 (2014) & H.B. 630 (2016). This closure method is also referred to as the "cap-in-place" closure method. Under CAMA, the North Carolina Department of Environmental Quality ("NC DEQ") classified the Allen Plant as an "intermediate risk" site. However, DE Carolinas is in the process of establishing replacement water supplies to neighboring properties and performing dam safety repair work that will make the site eligible for "low risk" classification under CAMA. A "low risk" classification will allow the Company to pursue a cap-in-place closure method for the Allen Plant as described in the federal CCR Rule.

The cap-in-place closure method to close the Retired Ash Basin and Active Ash Basin will require: removal and treatment of the bulk water/free liquids; interstitial/pore dewatering (as needed) and treatment; stabilization of remaining CCR materials sufficient to support the final cover system; grading of in-place CCR materials to promote positive drainage (no ponding) and prevent sloughing or movement of the final cover system; installation of a final cover system, including stormwater management controls; partial lowering of the dam; and post-closure groundwater monitoring and cover system maintenance. This will likely involve the installation of a low permeability barrier layer and a vegetated soil cover to protect the barrier layer. *See* 40 C.F.R. § 257.102(d).

DE Carolinas' closure plan for the Allen Plant, as described above, must be approved by NC DEQ. DE Carolinas expects a decision from NC DEQ on the Allen Plant closure plan in 2020.

III. Issues Addressed in the North Carolina Rate Proceeding

The issues surrounding DE Carolinas' selected closure option and associated costs for the Allen Plant were fully litigated in the North Carolina rate proceeding, North Carolina Utilities Commission ("NCUC" or the "Commission") Docket No. E-7, Sub 1146. Three intervenors, the Sierra Club, the North Carolina Attorney General's Office ("AGO") and the Public Staff of the NCUC ("Public Staff"), submitted testimony and evidence regarding the Company's proposed closure plan and cost recovery relating to the Allen Plant.

The Sierra Club disagreed with DE Carolinas' selection of the cap-in-place closure method for the Allen Plant. The Sierra Club asserted that continued storage of coal ash at Allen poses significant environmental risks, and that removal of coal ash from the Ash Basin would be more protective of the environment. The Sierra Club also contended that there are documented impacts to groundwater at these basins and that a cap will not prevent lateral inflow of groundwater from adjacent areas, and concluded that closure in place at the Allen Plant will allow continued contamination of downgradient groundwater and violate the technical standards of the CCR Rule. The Sierra Club also criticized the Company for continuing to operate unlined disposal areas after the mid-1970s, arguing that it was more cost-effective and commonplace to

build lined landfills beginning since the mid-1970s. NCUC Docket No. E-7, Sub 1146, Tr. Vol. 6, pp. 19-118, 120-124.

At the hearing, the Sierra Club, however, did not dispute on cross examination by the Company's counsel that the EPA had concluded in 1988 that only about 25% of all facilities had liners to reduce offsite mitigation of leachate, that only 40% of generating units built since 1975 had liners, that only 15% had leachate collection systems, that only one-third had groundwater monitoring systems and that such systems were more common at newer facilities, and that coal combustion waste streams generally do not exhibit hazardous characteristics. The Sierra Club witness also confirmed that he did not conduct a site-by-site engineering analysis of the cost to the Company to close and remediate its ash basins and construct new, lined dry landfills. Tr. Vol. 6, pp. 143-50.

The AGO alleged that DE Carolinas violated dam safety standards because, between 1996 and 2009, inspectors expressed concerns regarding stability of the ash basin dams. The AGO also alleged water quality violations at the Allen Plant. Tr. Vol. 11, pp. 259-267. The AGO admitted that its analysis did not identify any specific costs that could have been lower or should be disallowed, and stated that it was not in a position to say what the Company should or should not have done with respect to environmental compliance at the time the Company's CCR remediation costs were incurred. Yet, the AGO contended that it *could* opine on how the Company should have managed its coal ash in the past. Vol. 11, pp. 279 – Tr. Vol. 12, pp. 13-24.

The Public Staff did not recommend any specific disallowances to the Company's proposed cost-recovery relating to the Allen Plant. The Public Staff argued that, because CAMA does not require the submission of proposed closure plans for low and intermediate risk impoundments until December 31, 2019 to the Department of Environmental Quality ("DEQ"), a prudence review of the Allen Plant's closure plans at this time would be premature. The Public Staff therefore took no exception in the case to DE Carolinas' current proposed closure method for the coal ash basins located at the Allen Plant. Tr. Vol. 21, pp. 54-57.

After reviewing the testimony and evidence offered by the Company and intervenors regarding proposed costs for recovery in relation to the Allen Plant, the Commission held that the closure plans for both the Allen and Marshall Plant were appropriate. *Order Accepting Stipulation, Deciding Contested Issues, and Requiring Revenue Reduction* ("NCUC Order") filed on June, 22, 2018 in Docket No. E-7, Sub 1146. As an initial matter, the Commission rejected the Public Staff's argument that because DE Carolinas was not yet required to submit its closure plans for Allen to DEQ until 2019, review of the Allen Plant was immature. Specifically, with respect to pending determinations by DEQ, the Commission stated that they would not "delay [their] work in order to wait for [the] agenc[y] to complete their work," and concluded that review of Allen was proper at this time and that CCR cost recovery would also not be provisional. *Id.* at 323-324.

The Commission also rejected the Sierra Club's contentions, and found that witnesses for the Sierra Club had made no effort to quantify the economic impact of their recommendation, which was found to actually increase costs for customers if accepted. Instead, the Commission found Company witness Jon Kerin's testimony to be "persuas[ive]" in finding the closure plan

for the Allen Plant. The Commission, therefore, held that the requested costs for Allen Plant were reasonably and prudently incurred. NCUC Order at 270.

Additionally, the NCUC rejected the AGO's proposed disallowance theory outright. As noted by the Commission, the various intervenor's theories relating to disallowance were "all over the map" and "deficiently inconsistent." *Id.* at 317. Therefore, no costs proposed by the Company for recovery in DE Carolinas' general cost of service rate relating to the Allen Plant's ash management practices or closure plans were disallowed. *Id.* at 270.

Allen Aerial



Belews Creek Plant

Location:

- Stokes County, North Carolina

Historic CCR Storage Areas:

- Active Ash Basin
- Pine Hall Road Landfill
- Craig Road Landfill
- FGD Landfill
- Structural Fill

Closure Option Selected:

- Cap-in-place
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I. History of CCR Management

Duke Energy Carolinas, LLC's ("DE Carolinas" or the "Company") Belews Creek Steam Station ("Belews Creek Plant") is located along Belews Lake in Stokes County, North Carolina. Belews Creek Plant has been in service since 1974. The Belews Creek Plant has one basin – the Active Ash Basin – that was constructed between 1970 and 1972 and became operational in 1974. Just south of the Active Ash Basin, there is an additional impoundment that has been used to collect chemical wash-down water. This additional impoundment was constructed between 1972 and 1974 and is known as the Chemical Pond.

In 1984, the Belews Creek Plant converted to dry handling of fly ash and began disposing the fly ash in an onsite landfill known as the Pine Hall Road Landfill. The Company continued to sluice bottom ash to the Active Ash Basin. Disposal of fly ash continued at the Pine Hall Road Landfill until 2003. From 2003 to 2007, dry fly ash from the Belews Creek Plant was disposed of the Structural Fill nearby the Pine Hall Road Landfill. In 2007, the Company constructed the Craig Road Landfill in 2007, which then began receiving the plant's dry fly ash. In 2008, flue gas desulphurization ("FGD") residue, or gypsum, began to be produced as a result of the installation of FGD technology to improve air emissions from the site. That gypsum is disposed of in the onsite FGD Residue Landfill.

II. Closure Plan

DE Carolinas' closure plan for the Belews Creek Plant entails closing the Active Ash Basin, pursuant to state and federal regulatory requirements. *See* 80 Fed. Reg. 21301 (CCR Rule); North Carolina Coal Ash Management Act ("CAMA"), S.B. 729 (2014) & H.B. 630

(2016). This closure method is also referred to as the “cap-in-place” closure method. Under CAMA, the North Carolina Department of Environmental Quality (“NC DEQ”) classified the Belews Creek Plant as an “intermediate risk” site. However, DE Carolinas is in the process of establishing replacement water supplies to neighboring properties and performing dam safety repair work that will make the site eligible for “low risk” classification under CAMA. A “low risk” classification will allow the Company to pursue a cap-in-place closure method for the Belews Creek Plant as described in the federal CCR Rule.

The cap-in-place closure method to close the ash storage areas at the Belews Creek Plant will require: removal and treatment of the bulk water/free liquids; interstitial/pore dewatering (as needed) and treatment; stabilization of remaining CCR materials sufficient to support the final cover system; grading of in-place CCR materials to promote positive drainage (no ponding) and prevent sloughing or movement of the final cover system; installation of a final cover system, including stormwater management controls; partial lowering of the dam; and post-closure groundwater monitoring and cover system maintenance. This will likely involve the installation of a low permeability barrier layer and a vegetated soil cover to protect the barrier layer. *See* 40 C.F.R. § 257.102(d).

DE Carolinas’ closure plan for the Belews Creek Plant, as described above, must be approved by NC DEQ. DE Carolinas expects a decision from NC DEQ on the Belews Creek Plant closure plan in 2020.

III. Issues Addressed in the North Carolina Rate Proceeding

The issues surrounding the DE Carolinas’ selection of a closure option for the Belews Creek Plant site and the associated costs were fully litigated in the North Carolina rate proceeding, North Carolina Utilities Commission (the “Commission” or “NCUC”) Docket No. E-7, Sub 1146. Two intervening parties - the Sierra Club and the Public Staff of the NCUC – submitted testimony and evidence regarding the Company’s proposed cost-recovery relating to the Belews Creek Plant.

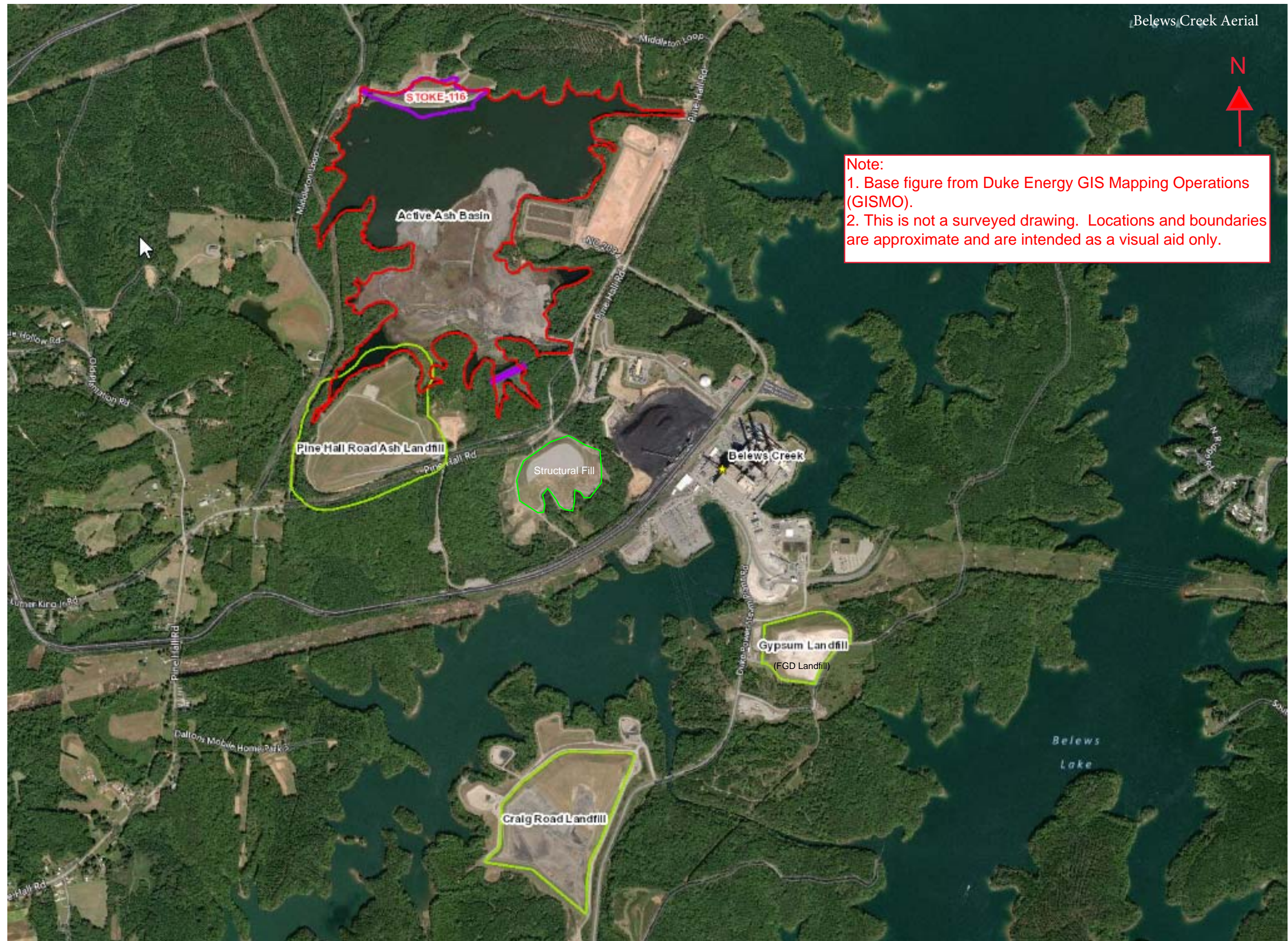
The Sierra Club alleged that DE Carolinas has a history of mismanagement and inaction with respect to CCR, and contended that such history is conclusive evidence of DE Carolinas’ imprudence in managing CCR at the Belews Creek Plant, and all other Company ash sites. The Sierra Club specifically alleged that, among other things, DE Carolinas waited 20 years after a fish kill occurred at the Belews Creek Plant to convert other plants to dry fly ash handling. This, they argued, supported a finding of imprudence with regard to all of DE Carolinas’ CCR costs, including those relating to the Belews Creek Plant. However, the Sierra Club did not identify any particular costs for disallowance relating to the Belews Creek Plant, or identify a particular CCR-related practice at the Belews Creek Plant as unilaterally evidencing imprudence. *Order Accepting Stipulation, Deciding Contested Issues, and Requiring Revenue Reduction*, at 226-228, Docket No. E-7, Sub 1146 (June 22, 2018) (“NCUC Order”).

The Public Staff did not recommend any specific disallowances to the Company’s proposed cost recovery relating to the Belews Creek Plant. The Public Staff argued that, because CAMA does not require the submission of proposed closure plans for low and intermediate risk

impoundments until December 31, 2019, a prudence review of the Belews Creek Plant's closure plans at this time would be premature. The Public Staff therefore took no exception in the case to DE Carolinas' current proposed closure method for the coal ash basins located at the Belews Creek Plant. NCUC Docket No. E-7, Sub 1146, Tr. Vol. 21, pp. 54-57.

However, the Public Staff took exception to costs the Company incurred relating to groundwater extraction and treatment costs at Belews Creek Plant. The Public Staff contended that these costs were incurred to remedy environmental violations, and that the costs exceed what the Company would have incurred under CAMA absent these violations. The Public Staff pointed to (1) the NC DEQ Settlement, also known as the Sutton Settlement, which the Public Staff contended resulted in costs greater than would have been necessary to pay for CAMA compliance without violations and (2) resolution of lawsuits involving alleged environmental violations where the resolution was more expensive than what would have been incurred absent the litigation. On these bases, the Public Staff argued that expenditures for groundwater extraction and treatment costs at the Belews Creek Plant should be disallowed. Tr. Vol. 26, pp. 730-734.

In reaching its decision regarding the Company's requested costs, the Commission "relie[d] heavily" upon Company witness Jon Kerin's testimony. As to the Public Staff's proposed disallowance of groundwater treatment costs, the Commission found witness Kerin's testimony to be "instructive" and "entitled to substantial weight" and concluded that the Company's groundwater treatment costs were reasonable, prudent and therefore recoverable. The Commission also agreed with witness Kerin that the Public Staff's position ignored the fact that, while the measures undertaken at the Belews Creek Plant were reflected in the Sutton Settlement, they still would have been undertaken pursuant to CAMA. The Sutton Settlement simply accelerated the timeline for undertaking those remedial measures. Additionally, and again relying on witness Kerin's testimony, the Commission also rejected the Sierra Club's claim that the Company had a history of mismanagement and inaction with respect to CCR at the Belews Creek Plant, and ultimately allowed all of the Company's CCR costs to be recovered. NCUC Order at 296-299.



Buck Steam Station

Location:

- **Rowan County, North Carolina**

Historic CCR Storage Areas:

- **Primary Ash Basin**
- **Additional Primary Ash Basin**
- **Secondary Ash Basin**
- **Dry Ash Storage Area**

Closure Option Selected:

- **Onsite Beneficiation Project**
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I. History of CCR Management

Buck Steam Station (“Buck Plant”), located along the Yadkin River in Rowan County, North Carolina, was Duke Energy Carolinas, LLC’s (“DE Carolinas” or the “Company”) first large capacity coal-fired electric generation unit built in the Carolinas. Buck Plant began commercial operations in 1926. All of its coal-fired units were retired by 2013. DE Carolinas currently operates a 620 MW natural gas facility at the Buck Plant site, which came on line in 2011.

The original ash basin at the Buck Plant, known as the Primary Ash Basin, was formed in 1956 by constructing a dam across a tributary to the Yadkin River. In 1977, the Company increased its ash storage capacity at Buck Plant by raising the main dam that formed the Primary Ash Basin and constructing a divider dam across the ash basin to create the Secondary Ash Basin. In 1982, DE Carolinas began construction on the Additional Primary Ash Basin to provide more storage for sluiced coal combustion residuals (“CCR”). In 2009, approximately 200,000 cubic yards of ash was excavated from the Additional Primary Ash Basin and placed within an onsite dry ash storage area to free up space for sluiced coal ash. DE Carolinas ceased sluicing any additional coal ash to the Buck Plant ash basins in 2013.

II. Closure Plan

DE Carolinas will be excavating ash from all ash storage areas at the Buck Plant. The Buck Plant’s three ash basins will be excavated consistent with the federal CCR Rule. Ash that is excavated from the Buck Plant basins will not be placed in an onsite or offsite CCR landfill, but will instead be processed through an onsite CCR beneficiation facility called a STAR® processing unit. The STAR® processing unit will be constructed by SEFA Group Inc. and will

be capable of processing 300,000 tons of CCR annually, as required by the North Carolina Coal Ash Management Act (“CAMA”). *See* N.C. Gen. Stat. § 130A-309.216 as enacted by 2016 N.C. Sess. Law 95. The STAR® unit will convert the CCR into a material that will then be sold for beneficial use to the concrete industry.

III. Issues Addressed in the North Carolina Rate Proceeding

The issues surrounding the Company’s selection of a closure option for the Buck Plant site and the associated costs were fully litigated in the North Carolina rate proceeding, North Carolina Utilities Commission (“NCUC” or the “Commission”) Docket No. E-7, Sub 1146.

Witnesses for the Public Staff of the NCUC (“Public Staff”) took exception to DE Carolinas’ selected closure method for the CCR storage areas at the Buck Plant. The Public Staff contended that DE Carolinas should have selected Weatherspoon, as opposed to the Buck Plant, as one of the three beneficiation sites as required by N.C. Gen. Stat. § 130A-309.216. By choosing Weatherspoon instead of Buck for beneficiation, Public Staff argued that the Company would have been able to lower closure costs for the Buck Plant. The Public Staff argued that the CCR units at the Buck Plant could have been classified as low risk upon completion of the establishment of permanent replacement water supplies and completion of applicable dam safety repair work, and instead may have been eligible for closure under the “cap-in-place” closure method under CAMA, which is a lower cost method. Based on this argument, the Public Staff recommended that the Commission disallow \$10 million that had already been incurred by DE Carolinas for the cementitious beneficiation project at the Buck Plant. NCUC Docket No. E-7, Sub 1146, Tr. Vol. 21, pp. 58-61.

In the NCUC *Order Accepting Stipulation, Deciding Contested Issues, and Requiring Revenue Reduction* issued on June 22, 2018 in Docket No. E-7, Sub 1146 (“*NCUC Order*”), the Commission accepted Company witness Jon Kerin’s description of DE Carolinas’ closure plans and resulting costs at Buck Plant as reasonable and prudent, and rejected the Public Staff’s proposed disallowances relating to the Buck Plant. The Commission agreed with the Company’s decision to select the Buck Plant for installation of an onsite beneficiation project. *Id.* at 307-308. The Commission found that, contrary to the Public Staff’s position, the most reasonable reading of N.C. Gen. Stat. § 130A-309.206 is that the North Carolina General Assembly intended the Company install and operate technology to process and transform ash to a usable product rather than use the basic drying and screening methods such as those occurring at Weatherspoon. Therefore, because the Company’s handling of Weatherspoon ash does not involve beneficiation processing or much of any processing beyond excavation, it would not satisfy the CAMA beneficiation requirement. Further, because the Public Staff concluded that the same beneficiation technology will be used by the Company at H.F. Lee and Cape Fear that will be used at the Buck Plant was a reasonable and prudent “method of executing the requirements of CAMA,” the Commission determined that the Public Staff could not credibly argue that the Company could have simply excavated, dried, and sold ash from Weatherspoon in order to comply with CAMA. *Id.* at 307.

Additionally, the Commission agreed with witness Kerin that because CAMA requires the installation of specific beneficiation technology, which costs approximately \$181 million, it

was reasonable for the Company to consider the amount of ash available at the site and the potential uses for the ash when making a decision to invest in beneficiation of a particular location. Noting that the Weatherspoon Plant has only 2.4 million tons of ash, approximately one-third of the amount located at the Buck Plant, the per-ton cost to process ash at Buck is significantly lower than it would be at Weatherspoon. *Id.* The Commission also noted that due to the Weatherspoon Plant's poor geographic location in relation to the major markets for ash used in the cement industry, and because trucking the ash is part of the cost of the sales, Buck Plant's proximity to Charlotte and Greensboro additionally makes it a much better location for beneficiation, with the highest revenue projection, followed by Cape Fear and H.F. Lee. *Id.* In conclusion, the Commission stated that the Public Staff's proposal was not feasible as it would not satisfy the Company's statutory requirement to beneficiate ash, and that therefore, the Company's choice beneficiation closure plan at the Buck Plant was reasonable and prudent. *Id.*

Buck Aerial



Rogers Energy Complex (Cliffside Steam Station)

Location:

- **Cleveland and Rutherford Counties, North Carolina**

Historic CCR Storage Areas:

- **Active Ash Basin**
- **Units 1-4 Inactive Ash Basin**
- **Unit 5 Inactive Ash Basin**
- **Dry Ash Storage Area**
- **CCP Landfill**

Closure Option Selected:

- **Excavation and cap-in-place**
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I. History of CCR Management

Duke Energy Carolinas, LLC's ("DE Carolinas" or the "Company") Cliffside Steam Station ("Cliffside Plant") is located in Mooresboro in Rutherford and Cleveland Counties, North Carolina. The Cliffside Plant began operations in 1940 with four coal-fired electric generation units ("Units 1 through 4"). Unit 5 came on line in 1972, followed by Unit 6 – a clean-coal unit – in 2012. Units 1 through 4 were retired from service in 2011. Currently, only Units 5 and 6 are currently in operation.

Coal combustion residuals ("CCR") from the Cliffside Plant's units have been historically disposed of in onsite ash basins. The oldest ash basin, known now Units 1-4 Inactive Ash Basin, was constructed and began operations in 1957 to receive sluiced ash from Units 1 through 4. The Units 1-4 Inactive Ash Basin was retired in 1977 when it reached capacity and has recently been excavated and repurposed for a storm water basin.

The plant's second ash basin, known as the Unit 5 Inactive Ash Basin, was constructed in 1970 in advance of Unit 5 coming on line. The Unit 5 Inactive Ash Basin received sluiced CCR from 1972 until it was retired in 1980, when it reached full capacity.

The plant's third ash basin, known as the Active Ash Basin, was constructed in 1975 to receive CCR from Unit 5. The Active Ash Basin was later expanded in 1980 to its modern footprint and continues to receive sluiced bottom ash and fly ash from Unit 5. An additional dry ash storage area is located within the northwestern portion of the Active Ash Basin's waste boundary. This dry ash storage area was likely created when ash was removed from the active ash basin in the 1980s to provide additional capacity for sluiced ash.

DE Carolinas also operates a Coal Combustion Products (“CCP”) Landfill, which was constructed with an engineered liner and is permitted to receive fly ash, bottom ash, and other CCR. Placement of CCR into the CCP Landfill began in October 2010 as Phase 1 of the landfill. Phase 2 of the CCP Landfill was placed into service in 2016 and currently Phases 3 and 4 are being designed.

II. Closure Plan

DE Carolinas’ selected closure option for the Cliffside Plant involves both closure in place, or cap-in-place closure, and excavation, pursuant to state and federal regulatory requirements. *See* 80 Fed. Reg. 21301 (CCR Rule); North Carolina Coal Ash Management Act (“CAMA”), S.B. 729 (2014) & H.B. 630 (2016). The Company has selected the excavation closure method for the Cliffside Plant’s Units 1-4 Inactive Ash Basin, which was completed in accordance with the CCR Rule. Excavated CCRs from the Units 1-4 Inactive Ash Basin were placed in the onsite CCR Landfill.

The Active Ash Basin and the Unit 5 Ash Basin will be capped-in-place. The Company also plans to incorporate CCR from the Dry Ash Storage Area into the Cliffside Plant’s cap-in-place closure approach. Under CAMA, the North Carolina Department of Environmental Quality (“NC DEQ”) classified these basins at the Cliffside Plant as “intermediate risk” basins. However, DE Carolinas is in the process of establishing replacement water supplies to neighboring properties and performing dam safety repair work that will make these basins eligible for “low risk” classification under CAMA. A “low risk” classification will allow the Company to pursue a cap-in-place closure method for these basins pursuant to the CCR Rule.

The cap-in-place closure method to close the Active Ash Basin and the Unit 5 Inactive Ash Basin will require: removal and treatment of the bulk water/free liquids; interstitial/pore dewatering (as needed) and treatment; stabilization of remaining CCR materials sufficient to support the final cover system; grading of in-place CCR materials to promote positive drainage (no ponding) and prevent sloughing or movement of the final cover system; installation of a final cover system, including stormwater management controls; partial lowering of the dam; and post-closure groundwater monitoring and cover system maintenance. This will likely involve the installation of a low permeability barrier layer and a vegetated soil cover to protect the barrier layer. *See* 40 C.F.R. § 257.102(d).

DE Carolinas’ closure plan for the Cliffside Plant, as described above, must be approved by NC DEQ. DE Carolinas expects a decision from NC DEQ on the Cliffside Plant closure plan in 2020.

III. Issues Addressed in the North Carolina Rate Proceeding

The issues surrounding DE Carolinas’ selected closure option and associated costs for the Cliffside Plant were fully litigated in the North Carolina rate proceeding, North Carolina Utilities Commission (“NCUC” or the “Commission”) Docket No. E-7, Sub 1146. Both the North

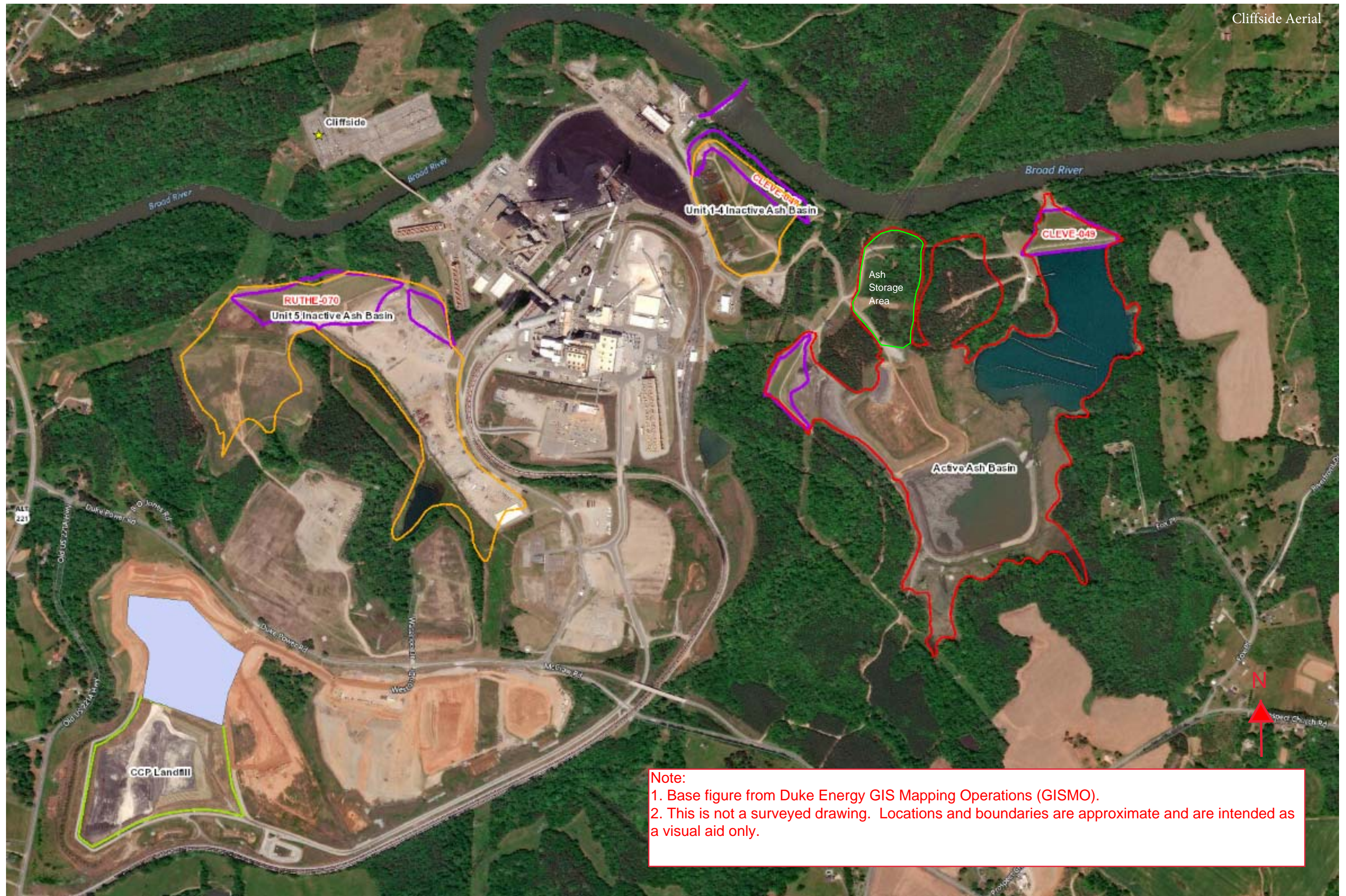
Carolina Attorney General's Office ("AGO") and the Public Staff for the NCUC challenged aspects of the Company's proposed cost recovery relating to the Cliffside Plant.

The AGO alleged that DE Carolinas had violated dam safety standards at the Cliffside Plant based on concerns about the stability of the plant's dams expressed by inspectors between 1996 and 2009. The AGO also alleged that DE Carolinas had violated the water quality standards at the Cliffside Plant, which the AGO argued was indicative of imprudent management. NCUC Docket No. E-7, Sub 1146, Tr. Vol. 11, pp. 259-267.

The AGO admitted that its analysis did not identify any specific costs that could have been lower or should be disallowed, and that it was not in a position to say what the Company should or should not have done with respect to environmental compliance at the time the Company's CCR remediation costs were incurred. Yet, the AGO contended that it *could* opine on how the Company should have managed its coal ash in the past. Vol. 11, pp. 279 – Tr. Vol. 12, pp. 13-24.

The Public Staff did not recommend any specific disallowances to the Company's proposed cost recovery relating to the Cliffside Plant. The Public Staff argued that, because CAMA does not require the submission of proposed closure plans for low and intermediate risk impoundments until December 31, 2019, a prudence review of the Cliffside Plant's closure plans at this time would be premature. The Public Staff therefore took no exception in the case to DE Carolinas' current proposed closure method for the coal ash basins located at Cliffside. Tr. Vol. 21, pp. 54-57.

Due to the fact that no party proposed specific disallowances relating to the plant, the North Carolina Utilities Commission's *Order Accepting Stipulation, Deciding Contested Issues, and Requiring Revenue Reduction* filed on June, 22, 2018 in Docket No. E-7, Sub 1146, did not specifically evaluate the Company's closure plans or costs relating to the Cliffside Plant. However, the Commission did reject the Public Staff's argument that because DE Carolinas was not yet required to submit its closure plans for Cliffside to NC DEQ until 2019, review of the Cliffside Steam Station was immature. Specifically, with respect to pending determinations by NC DEQ, the Commission stated that they would not "delay [their] work in order to wait for [the] agenc[y] to complete their work," and concluded that review of Cliffside was proper at this time and that CCR cost recovery would not be provisional. NCUC Order at 323-324. Additionally, the Commission did reject the AGO's proposed cost disallowance theory. In conclusion, no costs proposed by the Company for recovery in DE Carolinas' general cost of service rate relating ash management practices or closure plans at the Cliffside Plant closure plans were disallowed. *Id.* at 270, 317.



Dan River Steam Station

Location:

- **Rockingham County, North Carolina**

Historic CCR Storage Areas:

- **Primary Ash Basin**
- **Secondary Ash Basin**
- **Ash Fill 1**
- **Ash Fill 2**

Closure Option Selected:

- **Excavation**
-

I. History of CCR Management

Duke Energy Carolinas, LLC's ("DE Carolinas" or the "Company") Dan River Steam Station ("Dan River Plant") began operations in 1949. The original ash basin at the site was constructed in 1956 to receive sluiced coal combustion residuals ("CCR") for storage and disposal. In 1968, the Company expanded the original ash basin to cover the area later occupied by the primary and secondary basins. Approximately 8 years later, the Company modified the original basin to form the two basins known as the Primary and Secondary Ash Basins. These modifications were made to increase the storage capacity at the site and to improve the water quality of the effluent being discharged from the basins. In 1980, the Company constructed two onsite dry storage areas, Ash Fill 1 and Ash Fill 2, north of the primary and secondary ash basins. These ash fill areas served as a place for ash to be relocated from the primary and secondary basins to extend their service life.

Beginning in 2012, the Company began the process of decommissioning the Dan River Plant's coal-fired generation units and smaller gas-fired generation. By April 1, 2013, DE Carolinas had ceased sluicing any ash to the onsite ash basins.¹ These now demolished units have been replaced with a 620-MW natural gas facility that serves over half a million customers.

II. Closure Plan

DE Carolinas is excavating the Primary and Secondary Ash basins at the Dan River Plant. The ash basins are being excavated consistent with the federal CCR Rule. Both ash basins have also been designated by the North Carolina General Assembly as "high priority,"

¹ History of Construction – Dan River, at pp. 2-9 (2016).

requiring that they be excavated. *See* Coal Ash Management Act (“CAMA”), S.B. 729 (2014) & H.B. 630 (2016).

The CCR Rule and CAMA both require that excavated ash be placed in a lined CCR landfill. In 2014, DE Carolinas began investigating locations for a CCR landfill, including onsite and offsite options. The Company ultimately decided to construct an onsite landfill within the footprint of the Ash Fill areas, which required that those areas be excavated, as well. Ash from the Ash Fill areas has been placed in offsite landfill in Jetersville, Virginia. The remaining ash at the Dan River Plant will be excavated and placed in the onsite landfill.

III. Issues Addressed in the North Carolina Rate Proceeding

The issues surrounding the Company’s selection of a closure option for the Dan River Plant and the associated costs were fully litigated in the North Carolina rate proceeding, North Carolina Utilities Commission (“NCUC” or the “Commission”) Docket No. E-7, Sub 1146. No party criticized the reasonableness or prudence of the Company’s decision to excavate the primary and secondary ash basins and place the ash in an onsite, lined CCR landfill. Instead, some criticisms were lodged regarding the timing of excavation and the location of the landfill.

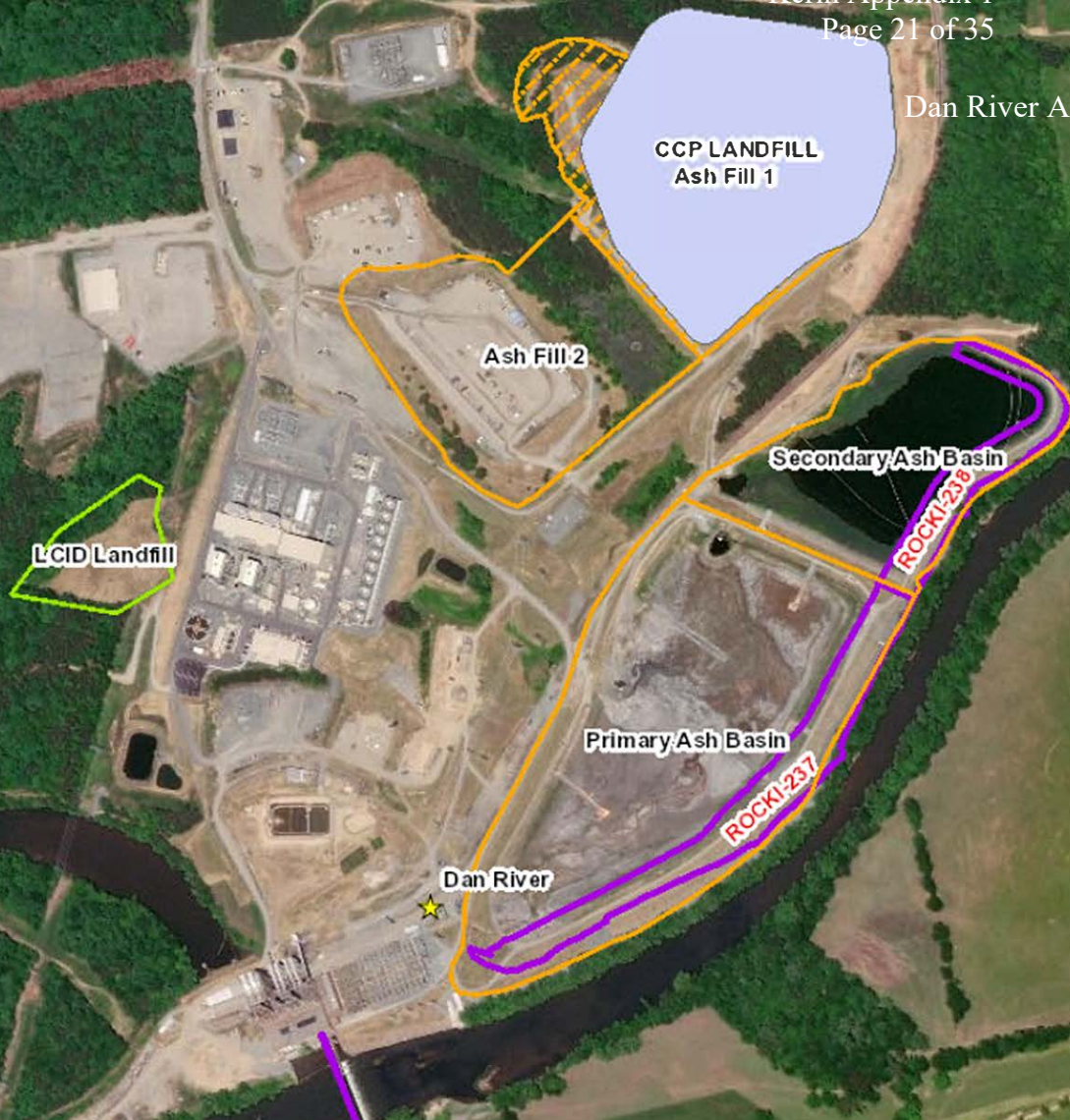
A witness for the Public Staff of the NCUC (“Public Staff”) took exception with DE Carolinas’ decision to excavate and transport coal ash from Ash Fill 1 at the Dan River Plant off-site to the Amelia Landfill in Jetersville, Virginia. Had DE Carolinas conducted an adequate assessment of on-site greenfield landfill options at the time it began evaluating off-site disposal options, the Public Staff witness argued, the Company would have identified viable onsite disposal options that would have allowed DE Carolinas to dispose of all of the ash on-site without having incurred the added expenses associated with the off-site transfer and disposal. The Public Staff further disputed whether the CAMA moratorium had any impact on DE Carolinas’ ability to construct an onsite greenfield landfill at Dan River in a timely fashion, and stated that there was no valid technical reason why an adequately sized onsite landfill could not have been located on the western boundary of the Dan River property. Public Staff recommended a total disallowance at the Dan River Plant of \$59.3 million from DE Carolinas’ coal ash expenditures during this recovery period, which reflected the costs that could have been avoided had DE Carolinas not transported ash to the Amelia Landfill. Tr. Vol 21, pp. 62-70.

In rebuttal, Company witness Jon Kerin explained that because of planning and permitting uncertainties and in order to ensure that the Company met the August 1, 2019 closure deadline established by CAMA, the Company promptly started excavating and transporting ash off-site from Dan River while the potential landfill options could be investigated. In 2015, the Company initiated transportation of ash by truck to Amelia Landfill operated by Waste Management in Jetersville, Virginia. Later, ash transportation transitioned to rail transport. The decision to build rail infrastructure on the Dan River Plant was consistent with the principle of minimizing impact to neighbors, significantly increased the transportation efficiency, and considered the fact that the Amelia Landfill was already rail ready. Tr. Vol. 14, 121-125 (Docket No. E-7, Sub 1146, NCUC).

Based on the Company's evaluation of CCR landfill locations, the Company ultimately decided to construct the landfill onsite following a complete validation of the location's technical suitability. The location for the CCR landfill is within the footprint of Ash Fill 1 and Ash Fill 2. All of Duke Energy's closure plans, including Dan River's plan, were developed to systematically prepare for executing ash basin closure, including the identification of necessary permits and approvals. All closure plans were submitted to the North Carolina Department of Environmental Quality ("NC DEQ") prior to beginning any ash excavations. The Company's closure plan for Dan River meets the national standards set forth by the CCR Rule as well as the more specific requirements determined by the NC DEQ under the CAMA regulatory process. Tr. Vol. 14, pp. 100-105, 113-114, 127-135.

In the NCUC's *Order Accepting Stipulation, Deciding Contested Issues, and Requiring Revenue Reduction* issued on June 22, 2018 in Docket No. E-7, Sub 1146 ("DE Carolinas NCUC Order"), the Commission accepted witness Kerin's description of DE Carolinas' closure plans and resulting costs at Dan River as reasonable and prudent, and in doing so, rejected the Public Staff's contention otherwise. Specifically, the Commission found the Public Staff's contention that the Company should have built an onsite landfill on the western property boundary of the Dan River Plant to be infeasible, due to issues concerning asbestos contamination, wetland and stream impacts, geographical limitations, permitting uncertainties, and other impacts to additional properties. DE Carolinas' selected location, on the other hand, minimizes the site's ash footprint, avoids undue risk to workers, limits potential environmental impacts, and reduces impacts to surrounding properties. The Commission therefore rejected the Public Staff's proposed disallowance, stating that infeasible options do not support a finding of imprudence, and that witness Kerin's testimony adequately demonstrated that the Company's actions and real-time decisions regarding the Dan River Plant were in fact reasonable and prudent, and the associated costs were prudently incurred. *DE Carolinas NCUC Order* at 303-306.

Dan River Aerial



Marshall Steam Station

Location:

- **Catawba County, North Carolina**

Historic CCR Storage Areas:

- **Ash Basin**
- **Dry Ash Landfill (Phase 1, Cell 1)**
- **Dry Ash Landfill (Phase 2, Area 1 Fly Ash)**
- **FGD (Gypsum) Landfill**
- **Structural Fill**
- **Subgrade Fill**
- **Industrial Landfill**

Closure Option Selected:

- **Cap-in-place and excavation**
-

I. History of CCR Management

Duke Energy Carolinas, LLC's ("DE Carolinas" or the "Company") Marshall Steam Station ("Marshall Plant") is located along the west bank of Lake Norman in Terrell, Catawba County, North Carolina. The Company began commercial operations at the Marshall Plant in 1965 when its first coal-fired electric generation unit came on line. The plant's lone Ash Basin was put into service that same year to receive coal combustion residuals ("CCR") from the plant's coal-fired generation units. Three additional units were added in 1966, 1969, and 1970. The Ash Basin consists of a single cell that was impounded by an earthen dike located at the historic confluence of Holdscraw Creek and the Catawba River. Since 1984, the Marshall Plant has only sluiced bottom ash to the Ash Basin.

In addition to wet ash, dry ash has been disposed of in six other areas at the Marshall Plant, including the dry ash landfill units, Phases 1 and 2, and Industrial Landfill No. 1. Flue gas desulfurization ("FGD") residuals – gypsum – were disposed of in the FGD Landfill. Fly ash has been utilized at the site as structural fill beneath portions of Industrial Landfill No. 1.

The Dry Ash Landfill Phase 1, Cell 1, was constructed in 1983 and 1984 with closure estimated taking place in 1986. The Dry Ash Landfill Phase 2 was constructed in 1983 and 1984 with closure taking place in 2001. The FGD Landfill was constructed in 2006 and is currently being capped for closure. The Industrial Landfill has five phases with a total of 13 cells and is permitted to receive fly ash, bottom ash, FGD gypsum, and other CCR. Construction began in 2010 and is designed with five phases of 13 cells. Phase 1 is currently in operation with Cells 1,

2, 3 and 4. The structural fill area began receiving CCR in 1999 through the first quarter of 2013. The subgrade fill began receiving CCR in 2009 through the third quarter of 2013.

II. Closure Plan

DE Carolinas' closure plan for the Marshall Plant entails closing a large portion of the Ash Basin and the FGD Landfill in place and excavating a small portion of the Ash Basin, pursuant to state and federal regulatory requirements. *See* 80 Fed. Reg. 21301 (CCR Rule); North Carolina Coal Ash Management Act ("CAMA"), S.B. 729 (2014) & H.B. 630 (2016). The closure in place method is also referred to as the "cap-in-place" closure method.

Under CAMA, the North Carolina Department of Environmental Quality ("NC DEQ") classified the Marshall Plant as an "intermediate risk" site. However, DE Carolinas is in the process of establishing replacement water supplies to neighboring properties and performing dam safety repair work that will make the site eligible for "low risk" classification under CAMA. A "low risk" classification will allow the Company to pursue a cap-in-place closure method for the Marshall Plant as described in the federal CCR Rule.

The cap-in-place closure method to close the Ash Basin will require: removal and treatment of the bulk water/free liquids; interstitial/pore dewatering (as needed) and treatment; stabilization of remaining CCR materials sufficient to support the final cover system; grading of in-place CCR materials to promote positive drainage (no ponding) and prevent sloughing or movement of the final cover system; installation of a final cover system, including stormwater management controls; partial lowering of the dam; and post-closure groundwater monitoring and cover system maintenance. This will likely involve the installation of a low permeability barrier layer and a vegetated soil cover to protect the barrier layer. *See* 40 C.F.R. § 257.102(d).

DE Carolinas' closure plan for the Marshall Plant, as described above, must be approved by NC DEQ. DE Carolinas expects a decision from NC DEQ on the Marshall Plant closure plan in 2020.

The Company has selected closure by excavation for the areas of the Ash Basin where Phases 2 through 4 of the Industrial Landfill are proposed to be constructed. CCRs from those areas will be placed in the Ash Basin to be closed-in-place pursuant to the CCR Rule.

III. Issues Addressed in the North Carolina Rate Proceeding

The issues surrounding the DE Carolinas' selected closure option and associated costs for the Marshall Plant were fully litigated in the North Carolina rate proceeding, North Carolina Utilities Commission ("NCUC" or the "Commission") Docket No. E-7, Sub 1146. Three intervenors, the Sierra Club, the North Carolina Attorney General's Office ("AGO") and the Public Staff of the NCUC ("Public Staff"), submitted testimony and evidence regarding the Company's proposed closure plan and cost-recovery relating to the Marshall Plant.

The Sierra Club disagreed with DE Carolinas' selection of the cap-in-place closure method for the Marshall Plant. The Sierra Club asserted that continued storage of coal ash at

Marshall poses significant environmental risks, and that removal of coal ash from the Ash Basin would be more protective of the environment. The Sierra Club also contended that there are documented impacts to groundwater at these basins and that a cap will not prevent lateral inflow of groundwater from adjacent areas, and concluded that closure in place at the Marshall Plant will allow continued contamination of downgradient groundwater and violate the technical standards of the CCR Rule. The Sierra Club also criticized the Company for continuing to operate unlined disposal areas after the mid-1970s, arguing that it was more cost-effective and commonplace to build lined landfills beginning since the mid-1970s. NCUC Docket No. E-7, Sub 1146, Tr. Vol. 6, pp. 19-118, 120-124.

At the hearing, the Sierra Club, however, did not dispute on cross examination by the Company's counsel that the EPA had concluded in 1988 that only about 25% of all facilities had liners to reduce offsite mitigation of leachate, that only 40% of generating units built since 1975 had liners, that only 15% had leachate collection systems, that only one-third had groundwater monitoring systems and that such systems were more common at newer facilities, and that coal combustion waste streams generally do not exhibit hazardous characteristics. The Sierra Club witness also confirmed that he did not conduct a site-by-site engineering analysis of the cost to the Company to close and remediate its ash basins and construct new, lined dry landfills. Tr. Vol. 6, pp. 143-50.

The AGO alleged that DE Carolinas violated dam safety standards because, between 1996 and 2009, inspectors expressed concerns regarding stability of the ash basin dams. The AGO also alleged water quality violations at the Marshall Plant. Tr. Vol. 11, pp. 259-267. The AGO admitted that its analysis did not identify any specific costs that could have been lower or should be disallowed, and that it was not in a position to say what the Company should or should not have done with respect to environmental compliance at the time the Company's CCR remediation costs were incurred. Yet, the AGO contended that it *could* opine on how the Company should have managed its coal ash in the past. Vol. 11, pp. 279 – Tr. Vol. 12, pp. 13-24.

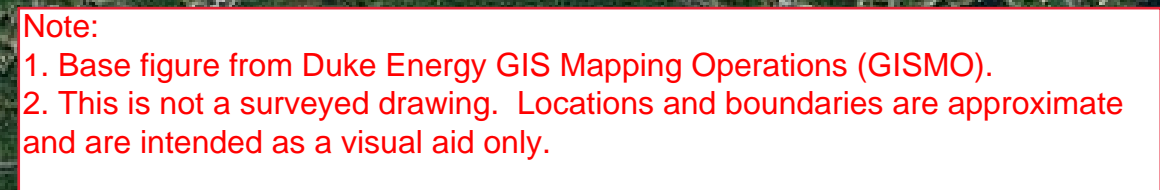
The Public Staff did not recommend any specific disallowances to the Company's proposed cost-recovery relating to the Marshall Plant. The Public Staff argued that, because CAMA does not require the submission of proposed closure plans for low and intermediate risk impoundments until December 31, 2019, a prudence review of the Marshall Plant's closure plans at this time would be premature. The Public Staff therefore took no exception in the case to DE Carolinas' current proposed closure method for the coal ash basins located at Marshall. Tr. Vol. 21, pp. 54-57.

After reviewing the testimony and evidence offered by the Company and intervenors regarding proposed costs for recovery in relation to the Marshall Plant, the Commission held that the closure plan for the Marshall Plant was appropriate. *Order Accepting Stipulation, Deciding Contested Issues, and Requiring Revenue Reduction* ("NCUC Order") issued on June, 22, 2018 in Docket No. E-7, Sub 1146. As an initial matter, the NCUC rejected the Public Staff's argument that because DE Carolinas was not yet required to submit its closure plans for Marshall to DEQ until 2019, review of the Marshall Plant was immature. Specifically, with respect to pending determinations by DEQ, the Commission stated that they would not "delay [their] work in order to wait for [the] agenc[y] to complete their work," and concluded that review of

Marshall was proper at this time and that CCR cost recovery would not be provisional. NCUC Order at 323-324.

The NCUC also rejected the Sierra Club's contentions, and found that witnesses for the Sierra Club had made no effort to quantify the economic impact of their recommendation, which was found to actually increase costs for customers if accepted. Instead, the Commission found Company witness Jon Kerin's testimony was "persuas[ive]" and approved the closure plan for the Marshall Plant. The Commission, therefore, held that the requested costs for Marshall Plant were reasonably and prudently incurred. NCUC Order at 270.

Additionally, the Commission rejected the AGO's proposed disallowance theory outright. As noted by the Commission, the various intervenor's theories relating to disallowance were "all over the map" and "deficiently inconsistent." *Id.* at 317. Therefore, no costs proposed by the Company for recovery in DE Carolinas' general cost of service rate relating to the Marshall Plant's ash management practices or closure plans were disallowed. *Id.* at 270.



Riverbend Steam Station

Location:

- **Gaston County, North Carolina**

Historic CCR Storage Areas:

- **Primary Ash Basin**
- **Secondary Ash Basin**
- **Cinder Pit Storage Area**
- **Dry Ash Stack**

Closure Option Selected:

- **Excavation**
-

I. History of CCR Management

Duke Energy Carolinas, LLC's ("DE Carolinas" or the "Company") Riverbend Steam Station ("Riverbend Plant") is located in Mt. Holly, Gaston County, North Carolina along the western bank of the Catawba River. Commercial operations at the Riverbend Plant began in 1929 when its two original coal-fired electric generation units went on line. The Company added five additional generation units in 1954. Coal combustion residuals ("CCR") from the two original units were stored within the Cinder Pit Storage Area from 1929 to 1957. The CCR were transported to the Cinder Pit Storage Area via rail car. The Cinder Pit Storage Area predominately contains dry bottom ash because this area predates the installation of precipitators and wet sluicing. In 1957, the Company constructed a single cell ash basin and began sluicing CCR. The single cell ash basin was vertically expanded and divided in 1979 to create what are referred to now as the Primary Ash Basin and the Secondary Ash Basin. When CCR were sluiced at the Riverbend Plant, the Primary Ash Basin was generally used for initial treatment of wastewater, with secondary treatment occurring in the Secondary Ash Basin before discharge to the Catawba River. During the time when the Riverbend Plant was actively sluicing CCR to the ash basins, the Company would periodically remove ash to prolong the life of the basins. The Dry Ash Stack was constructed using the removed CCR from the basins. The Riverbend Plant stopped sluicing CCRs in 2013 when all of the facility's coal-fired units were retired.

II. Closure Plan

DE Carolinas' closure plan for the Riverbend Plant entails complete excavation of all CCR storage areas and placement offsite pursuant to state and federal regulatory requirements.

The Riverbend Plant is not currently subject to CCR Rule provisions regarding basin closure. However, in response to the United States Court of Appeals for the District of Columbia Circuit's August 21, 2018 decision in *USWAG v. EPA* (No. 15-1219), EPA is expected to undertake a rulemaking that would regulate inactive impoundments at closed power plants, including the Riverbend basins.

Due to the Riverbend Plant's designation as a "high priority site" by the North Carolina General Assembly, closure of its ash basins must be completed by August 2019. *See* Coal Ash Management Act, Senate Bill 729. DE Carolinas initially contracted with Waste Management Inc. to begin removing CCR from the Dry Ash Stack at the Riverbend Plant and transporting them to the R&B Landfill in Homer, Georgia via truck. DE Carolinas also commenced transporting excavated CCR from Riverbend to the Company's permitted landfill at Marshall Steam Station ("Marshall Plant") in July 2015. Transportation of CCR to R&B Landfill ceased in September 2015, and the Company then initiated the transportation of ash to the Brickhaven Mine Structural Fill in Chatham County, North Carolina. The Company ended transports of CCR to Marshall in the first quarter of 2016. DE Carolinas continue to transport excavated ash to the Brickhaven Mine via rail, which will continue until all CCR are removed.

III. Issues Addressed in the North Carolina Rate Proceeding

The issues surrounding the Company's selection of a closure option for the Riverbend Plant and the associated costs were fully litigated in the North Carolina rate proceeding, North Carolina Utilities Commission ("NCUC" or the "Commission") Docket No. E-7, Sub 1146.

The Public Staff of the NCUC ("Public Staff") took no exception to DE Carolinas' overall ash management plan at the Riverbend Plant, including its decision to remove CCR material from the ash stack area or the cinder pit, even though those units are not subject to CAMA or CCR. The Public Staff did, however, object to DE Carolinas' decision to transport and dispose of CCR material from the ash stack to the R&B Landfill in Homer, Georgia and to the Brickhaven Mine. The Public Staff argued that the Brickhaven Mine did not present any scheduling advantages or reduced costs, and instead resulted in increased delays and litigation resulting from community opposition to the proposed project, and suggested that the Marshall Plant should have instead been utilized for the disposal of all ash from the Riverbend Plant. The Public Staff therefore recommended the Commission disallow the \$489,000 as the premium that was paid to dispose of CCR material from the Dry Ash Stack at the R&B Landfill in Homer, Georgia versus the Marshall Plant. Tr. Vol. 21, pp. 70-86.

Company witness Jon Kerin rebutted the Public Staff's testimony and explained that the aggressive excavation schedule was due to the North Carolina Department of Environmental Quality's ("NC DEQ") requirement that DE Carolinas begin excavation of ash from the Riverbend Plant within 60 days of receiving its storm water permit from NC DEQ. When DE Carolinas received the permit in May 2015, the Marshall Plant was not available to accept Riverbend ash. While the Company was exploring long-term options to receive the Riverbend Plant's ash, it was still obligated to meet NC DEQ's deadline, meaning the Company needed to contract with a company to haul and dispose of the Riverbend Plant's ash within a minimal amount of time. DE Carolinas eventually received approval to dispose of the Riverbend Plant's

ash at the Marshall Plant and began doing so in July 2015. The Commission was persuaded by witness Kerin's testimony that DE Carolinas would not have been able to send ash to the Marshall Plant within the timeframes required by NC DEQ. *Order Accepting Stipulation, Deciding Contested Issues, and Requiring Revenue Reduction*, at 308-309, Docket No. E-7, Sub 1146 (Jun. 22, 2018) ("*DE Carolinas NCUC Order*").

The Commission concluded that the Public Staff's recommended disallowance for the Riverbend Plant, similar to its recommended disallowances for other plants, was based on a "perfect world" scenario where the Company could have accurately predicted permitting uncertainties. *Id.* at 309. Further, the Commission declined to approve disallowances where DE Carolinas promptly achieved compliance with NC DEQ's 60-day excavation requirement, since it used the CAMA deadlines as the framework by which to assess prudence relating to the Company's closure plans. In conclusion, the Commission held that the Company acted reasonably and prudently in beginning excavation at the Riverbend Plant as soon as practicable in order to ensure compliance with NC DEQ's requirements, and that the temporary disposal solution was therefore also reasonable and prudent. *Id.* at 308-309.



W.S. Lee Steam Station

Location:

- Anderson County, South Carolina

Historic CCR Storage Areas:

- Inactive Ash Basin
- Old Ash Fill
- Primary Ash Basin
- Secondary Ash Basin
- Structural Fill

Closure Option Selected:

- Excavation
-

I. History of CCR Management

Duke Energy Carolinas, LLC's ("DE Carolinas" or the "Company") W.S. Lee Steam Station ("W.S. Lee Plant") is located along the Saluda River in Anderson County, South Carolina. The W.S. Lee Plant began operations in 1951 and consisted of three coal-fired electric generating units. DE Carolinas retired the W.S. Lee Plant as a coal plant in 2014 and now operates a natural gas combined-cycle plant at the site.

The W.S. Lee Plant's first ash basin, now known as the Inactive Ash Basin, was constructed in 1951 and received coal combustion residuals ("CCR") from 1951 through 1974. The Primary and Secondary Ash Basins were constructed in 1974 and 1978 and received sluiced CCR and other wastewater streams until November 2014. Periodically, CCR were removed from the ash basins and placed at other locations onsite, including the Old Ash Fill and the Structural Fill. The W.S. Lee Plant has not generated CCR since the decommissioning of the site's coal-fired units in 2014. Since 2014, the Primary and Secondary Ash Basins have only received wastewater from the combined-cycle facilities and other associated facility wastewaters.

II. Closure Plan

DE Carolinas' closure plan for the W.S. Lee Plant entails excavation and placement of CCR in permitted offsite and onsite landfills consistent with South Carolina and federal regulatory requirements. CCR from the Inactive Ash Basin and the Old Ash Fill are being excavated pursuant to a Consent Agreement (14-13-HW) between DE Carolinas and the South Carolina Department of Health and Environmental Control ("SCDHEC"). On December 18, 2014 in a letter to SCDHEC, the Company provided its long-term strategy for managing CCR

from the Primary and Secondary Ash Basins as well as the Structural Fill. In this letter, the Company committed to excavating the Primary and Secondary Ash Basins and the Structural Fill and placing the CCR in a lined, long-term solution. In addition to meeting its obligations under South Carolina regulatory requirements, the Company's closure plan for the Primary and Secondary Ash Basins satisfies the federal CCR Rule's closure requirements.

The majority of CCR from the W.S. Lee Plant will be excavated and placed in an onsite, permitted landfill located within the footprint of the Secondary Ash Basin. During the planning and permitting of the onsite landfill and in order to meet the deadlines of the Consent Agreement, CCR from the Inactive Ash Basin and Old Ash Fill have been excavated and transported to the R&B Landfill in Homer, Georgia. The remaining CCR from the Primary and Secondary Ash Basins and the Structural Fill will be consolidated and placed in the onsite landfill. When complete, the onsite landfill will be closed and vegetated.

III. Issues Addressed in the North Carolina Rate Proceeding

The issues surrounding the Company's selected closure option for the W.S. Lee Plant and the associated costs were fully litigated in the North Carolina rate proceeding, North Carolina Utility Commission ("NCUC" or the "Commission") Docket No. E-7, Sub 1146.

The Public Staff of the NCUC ("Public Staff") agreed with DE Carolinas' decision to utilize an onsite landfill to dispose of the CCR from the Primary Ash Basin and Secondary Ash Basin at the W.S. Lee Plant, noting that this approach was consistent with Duke Energy's stated guiding principles and provided a lower cost closure solution compared to an offsite landfill. NCUC Docket No. E-7, Sub 1146, Tr. Vol. 21, pp. 39-40. The Public Staff also concurred with DE Carolinas' decision to take remedial actions to address CCR stored in the Inactive Ash Basin and the Old Ash Fill to mitigate risk associated with long-term environmental issues at the site. However, the Public Staff took exception with DE Carolinas' decision to immediately begin excavation and transportation of CCR to the R&B landfill in Homer, Georgia.

Instead, the Public Staff testified that DE Carolinas could have repaired the dikes of the Inactive Ash Basin in 2014, and thereby avoided the need to immediately excavate the site. The Public Staff also contended that DE Carolinas failed to provide a regulatory or technical reason to substantiate immediate removal of the ash from the Inactive Ash Basin. The Public Staff recommended that the Commission disallow approximately \$27 million from DE Carolinas' request, which represents the premium associated with the costs incurred by DE Carolinas to transport ash to Homer, Georgia, as opposed to excavating and landfilling on-site. *Id.* at pp. 40-41. Additionally, the Public Staff took exception with DE Carolinas' plan to excavate and dispose of the coal ash material contained in the Structural Fill area at the W.S. Lee Plant. *Id.*

In its *Order Accepting Stipulation, Deciding Contested Issues, and Requiring Revenue Reduction* ("NCUC DE Carolinas Order"), issued on June 22, 2018, the Commission found that the Company's overall ash management plan for the W.S. Lee Plant, which includes building an onsite landfill to store ash from the Primary and Secondary ash basins, is reasonable and prudent. The Commission also agreed with the Company that action was necessary to excavate the Inactive Ash Basin and Old Ash Fill to mitigate risk associated with the long-term environmental

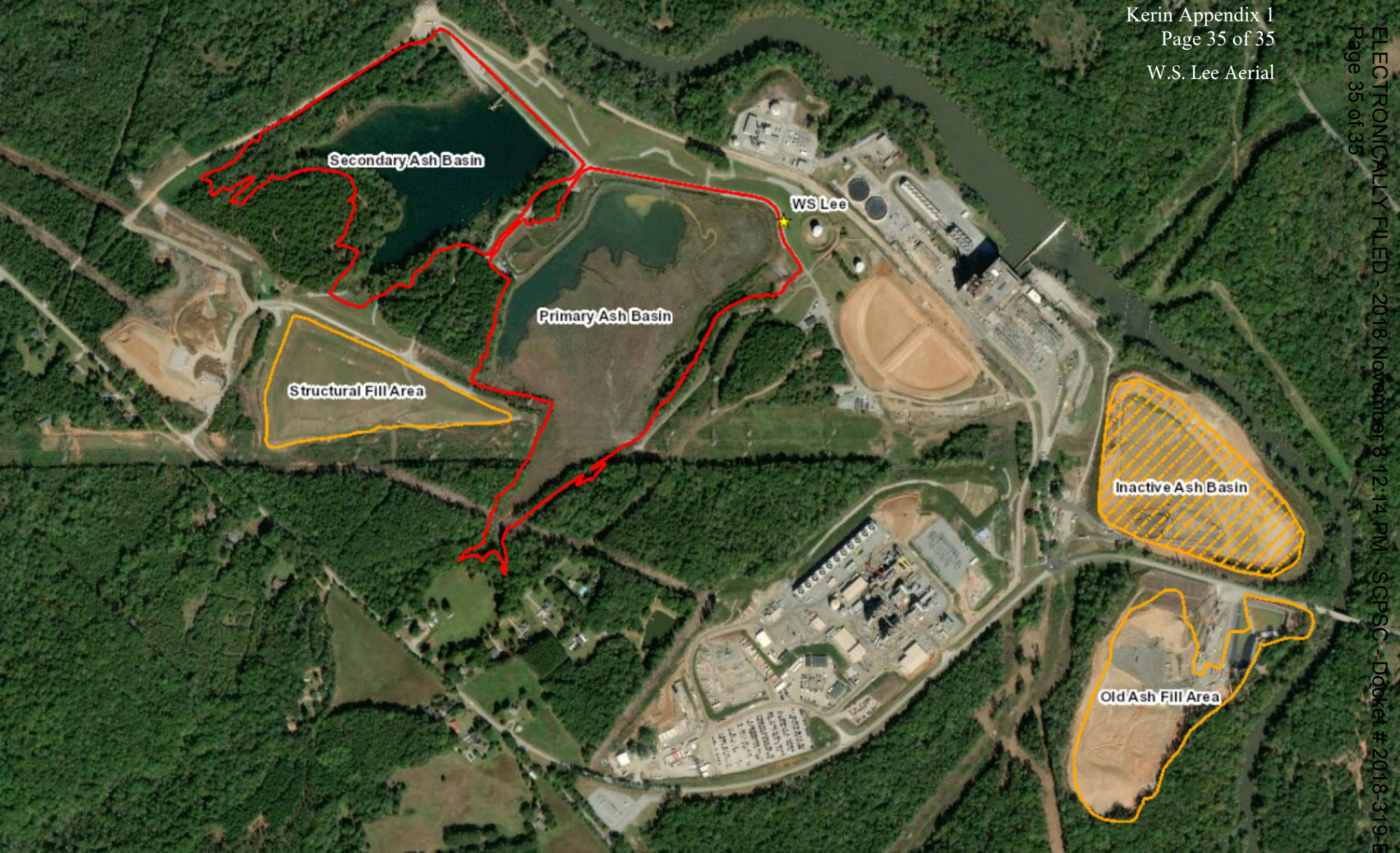
issues, based on the proximity of the Inactive Ash Basin to the Saluda River. The Commission therefore declined to accept the Public Staff's conclusion that delaying excavation of those sites until after completion of the onsite landfill would have been acceptable to South Carolina regulators or would have eliminated the risk to the Saluda River. NCUC DE Carolinas Order at 309. Noting DE Carolinas' requirement to excavate the Inactive Ash Basin and Old Ash Fill by December 31, 2017, due to the Company's agreement with SCDHEC, the Commission held that the Public Staff's plan—which would have included a seven-year delay in excavation— was practically infeasible. Accordingly, the Commission rejected the Public Staff's contention that DE Carolinas' decision with regard to excavation was unreasonable or imprudent. *Id.* at 309-310.

Additionally, the Commission agreed with DE Carolinas that there were significant flaws in the Public Staff's plan, even assuming the plan would have been acceptable to South Carolina regulators. The Public Staff acknowledged that in certain areas of the Inactive Ash Basin that abut the Saluda River, the steep, 1:1 slopes are covered in trees and vegetation. Therefore, the Public Staff conceded that trees would have to be removed to execute its proposal, and that its analysis did not consider how the trees would be removed (with heavy equipment or chain saws) or how tree removal might affect slope stability. The Public Staff also conceded that soft, alluvial clays run beneath the Inactive Ash Basin and the steep slopes where the proposed work would occur, and that the dam itself is partially constructed from ash and sandy silt that would also have to be excavated. *Id.* at 310.

In contrast to the Public Staff's flawed analysis, the Commission found DE Carolinas' evidence "persuasive" and "credible" as presented in witness Jon Kerin's testimony, which explained that the Public Staff's proposed grading and stability project to delay excavation would have posed undue risk to bank stability, worker safety, and risk of an ash release into the Saluda River. The Commission therefore concluded that these new risks were understandably unacceptable to DE Carolinas, and that it was reasonable and prudent for the Company to immediately excavate the Inactive Ash Basin and Old Ash Fill, in compliance with its agreement with SCDHEC. Further, the Commission held that because no onsite landfill was available for the disposal of the Inactive Ash Basin and Old Ash Fill materials at the time they were excavated, that it was also reasonable and prudent for the Company to utilize the R&B landfill in Homer, Georgia for disposal of those materials. In conclusion, the Commission rejected all disallowances advocated by the Public Staff with respect to DE Carolinas' ash management and closure plans at W.S. Lee. *Id.* at 311.

Finally, while no party suggested any disallowances with respect to the Company's plan to mitigate future risk of operating two ash management structures, which would be the result if it did not excavate the Structural Fill Area at the W.S. Lee Plant in the future, again based on witness Kerin's testimony, the Commission agreed that this plan is reasonable and prudent. Witness Kerin's description of the Company's decision to consolidate all remaining ash at the W.S. Lee Plant through a single management structure—the landfill—in order to resolve SCDHEC's environmental concerns, was superior to the "piecemeal" approach proposed by the Public Staff. Additionally, requiring the Company to later excavate the Structural Fill area after the landfill project was completed, would cause the Company to incur greater costs than it would incur by managing the ash while the landfill project is ongoing. Therefore, the Commission held

DE Carolinas' plan to excavate the area now as a reasonable and prudent approach to mitigation against potential future ash related liability and costs. *Id.*



Secondary Ash Basin

Primary Ash Basin

Structural Fill Area

WS Lee

Inactive Ash Basin

Old Ash Fill Area